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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,953	04/13/2004	William D. Sigworth	0176-PA-CIP	5455

7590 01/09/2006

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EXAMINER
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THEXTON, MATTHEW

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/823,953	SIGWORTH, WILLIAM D.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Matthew A. Thexton	1714	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9 and 11-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Text of Title 35 USC not Cited***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claims Version***

The claims as amended in the response filed 2005 December 8 have been examined.

### ***Claims Analysis***

Claims 8 and 10 have been canceled.

Claim 1 is directed to processes comprising mixing three components

- (1) at least one natural fiber,
- (2) at least one polypropylene resin (which may be a copolymer), and
- (3) at least one functionalized polypropylene (which may be a copolymer)  
coupling agent which has a MWD of greater than 2.5 and  
comprises more than 1 mmole of grafted polar monomer per 100  
grams of coupling agent.

Dependent claims 2-7, 9, and 11-13 further limit the type of natural fiber, the amount of natural fiber, the amount of grafted polar monomer, the presence and type or absence of comonomers in the polypropylene, the type of polar monomer.

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Independent claim 14 is directed to a material substantially corresponding to that defined in claim 1.

Independent claim 15 is directed to a material substantially corresponding to that defined in claim 1 with the addition of a lubricant selected from the group consisting of fatty acid amides and fatty acid esters.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each claim refers to "the polypropylene resin" however claim 1 from which these claims depend have two different uses of "polypropylene resin," thus rendering these claims indefinite.

### ***Claim Rejections***

Claims 1-7, 9, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Epolene Polymers" (publication WA-5E, November 2002, Eastman Chemical Company) taken with evidentiary reference "Epolene Waxes" (publication F-301E, December 1996, Eastman Chemical Company).

The present claims are broadly discussed hereinabove in the section ***Claims Analysis*** which is incorporated by reference.

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“Epolene Polymers” suggests using Epolene coupling agents in composites of natural fibers used to reinforce polyolefins (second page, paragraphs 1 and 4).

“Epolene Waxes” establishes that maleated polyolefins C-16, C-18, E-43 were available and were advertised to have certain MWDs, at the time of the invention. In particular, the maleated polyethylenes C-16 and C-18 have MWDs of 4.6 and 2.6 respectively (page 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed maleated poly(ethylene-propylene) copolymer given the disclosure of maleated polyolefins in “Epolene Polymers” and in the manner suggested in that reference because the broad suggestion of maleated polyolefins encompasses such copolymers. The MWD would reasonably be expected to be higher than the propylene homopolymer and lower than the homopolymer polyethylene, thus arriving at the claimed limitation.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over “Epolene Polymers” (publication WA-5E, November 2002, Eastman Chemical Company) taken with evidentiary reference “Epolene Waxes” (publication F-301E, December 1996, Eastman Chemical Company) and further in view of Wolcott et al. (“Coupling Agent/Lubricant...”).

The present claim is broadly discussed hereinabove in the section **Claims Analysis** which is incorporated by reference.

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References "Epolene Polymers" and "Epolene Waxes" are discussed immediately above, which is incorporated here by reference.

Wolcott et al. discloses the use of fatty ester amide lubricant for these wood plastic composites. It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed the lubricants of Wolcott et al. in the mixtures of the rejection based on the combination of references since it is suggested by Wolcott et al. to be beneficial.

Claims 1-7, 9, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Godavarti et al. (US 6265037-B1) in view of "Epolene Polymers" (publication WA-5E, November 2002, Eastman Chemical Company) taken with evidentiary reference "Epolene Waxes" (publication F-301E, December 1996, Eastman Chemical Company).

The present claims are broadly discussed hereinabove in the section **Claims Analysis** which is incorporated by reference.

Godavarti et al. (US 6265037-B1) discloses polypropylene filled mixtures using polypropylene, a compatibilizer of maleic anhydride modified poly(propylene-co-ethylene) (claim 19), and wood fiber (claims). Although only maleated polypropylenes are exemplified (column 17, line 7 to column 18, line 12), the reference suggests polyolefins broadly and copolymer is claimed.

"Epolene Polymers" suggests using Epolene coupling agents in composites of natural fibers used to reinforce polyolefins (second page, paragraphs 1 and 4).

"Epolene Waxes" establishes that maleated polyolefins C-16, C-18, E-43 were available and were advertised to have certain MWDs, at the time of the invention. In particular, the maleated polyethylenes C-16 and C-18 have MWDs of 4.6 and 2.6 respectively (page 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed maleic anhydride modified poly(propylene-co-ethylene) in the mixtures of '037 given the suggestion to do so. The MWD would reasonably be expected to be higher than the propylene homopolymer and lower than the homopolymer polyethylene, thus arriving at the claimed limitation.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Godavarti et al. (US 6265037-B1) in view of "Epolene Polymers" (publication WA-5E, November 2002, Eastman Chemical Company) taken with evidentiary reference "Epolene Waxes" (publication F-301E, December 1996, Eastman Chemical Company) and further in view of Wolcott et al. ("Coupling Agent/Lubricant...").

The present claim is broadly discussed hereinabove in the section **Claims Analysis** which is incorporated by reference.

References '037, "Epolene Polymers" and "Epolene Waxes" are discussed immediately above, which is incorporated here by reference.

Wolcott et al. discloses the use of fatty ester amide lubricant for these wood plastic composites. It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed the lubricants of Wolcott et al. in the mixtures of

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the rejection based on the combination of references since it is suggested by Wolcott et al. to be beneficial.

### ***Response to Arguments***

Applicant's arguments filed 2005 December 8 have been fully considered but they are not persuasive. At pages 5-6, Applicant avers that the examples of the specification demonstrate the unexpected advantage of using polypropylene coupling agent having a MWD greater than 2.5. The claimed subject matter is broader than the scope of the showing which is limited to propylene homopolymer combined with maleic anhydride modified propylene homopolymer coupling agent having a MWD greater than 2.5 as compared to maleic anhydride modified propylene homopolymer coupling agent having a MWD less than 2.5. At page 7 Applicant avers that "none of Godavarti et al, Epolene Polymers, or Epolene Waxes teaches or suggest that a functionalized polypropylene coupling agent that possesses a molecular weight distribution of greater than 2.5, should or could be used in wood fiber composite material." As set forth in the statement of rejection hereinabove, the references taken together are thought to suggest copolymers which would have a MWD greater than 2.5, as encompassed by the present claims.

Applicant's arguments, see pages 8-9 of response, filed 2005 December 8, with respect to Sigworth et al. ("The Use of Functionalized Polyolefins...") have been fully considered and are persuasive. The 35 U.S.C. 102(b) rejection of claims 1-7, 9, and 11-15 has been withdrawn.



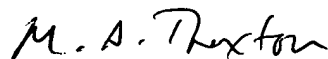
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***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Thexton whose telephone number is 571-272-1125. The examiner can normally be reached on Tuesday-Friday, 9:30 to 7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S. Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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